



# UNITED STATES PATENT AND TRADEMARK OFFICE

52  
UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/810,971	03/16/2001	Sheng Huang	10984.3US11	7444
23552	7590	04/07/2005	EXAMINER	
MERCHANT & GOULD PC P.O. BOX 2903 MINNEAPOLIS, MN 55402-0903			SIMITOSKI, MICHAEL J	
			ART UNIT	PAPER NUMBER
			2134	

DATE MAILED: 04/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/810,971

Applicant(s)

HUANG ET AL.

Examiner

Michael J Simitoski

Art Unit

2134

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-9, 11-31 and 33-45 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-31 and 33-45 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. The response of 12/27/04 was received and considered.
2. Claims 1-9, 11-31 & 33-45 are pending.

### ***Response to Arguments***

3. In light of Applicant's response, the objection to the specification and objections to claims 1, 16 & 38 and rejections of claims 8 & 30 under 35 U.S.C. §112 ¶2, set forth in the previous Office Action, are withdrawn.
4. Applicant's arguments filed 12/27/04 have been fully considered but they are not persuasive. However, the claim rejections are modified slightly to address Applicant's amendments.
5. Applicant's response (p. 11, §VI, ¶3) suggests that a dot pattern can be used to embed latent images therein, however a dot pattern is not equivalent to a latent image. It is noted that the features upon which applicant relies (i.e., the distinction between a latent image and a dot pattern) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). One of ordinary skill in the art would consider a dot pattern and an image to be equivalent, as an image is simply a pattern of "dots" whether digital pixels or printed ink dots.
6. Applicant's response (p. 11, §VI, ¶4 – p. 12, ¶1) suggests that Koltai fails to disclose embedding each latent image object into its respective watermark layer. However, Koltai discloses multiple watermark layers (for example, CMYK) and dot patterns/secondary images

and selecting at least one latent image object/secondary images for each of the plural watermark layers (col. 4, line s11-59). The secondary images can be oriented/modulated at any angle (col. 4, lines 44-45). Claims 1 & 23 only recite a dot pattern to the extent that one exists and therefore the Koltai latent image reads on a dot pattern.

7. Applicant's response (p. 12, ¶2) suggests that Koltai fails to disclose "phase modulation" because Koltai discloses the repositioning of a dot. Applicant further suggests that Koltai fails to disclose "embedding each latent image object into its respective watermark layer by modulation, wherein the frequency and orientation of the decoder are used to decode the at least one latent image object for each watermark layer. It is noted that the features upon which applicant relies (i.e., "phase modulation") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Applicant's amended claims recite "modulation" which is simply an alteration. As Applicant has pointed out, Koltai does disclose the repositioning or modulation of a dot. Further, Applicant suggests that Koltai fails to disclose "wherein the frequency and orientation of the decoder are used to decode the at least one latent image object for each watermark layer". Further, Fig. 19A of Koltai discloses various techniques for decoding the layers, where frequency and rotation/orientation (col. 16, lines 1-5). The user would require the right frequency lens and the correct orientation to decode the image (col. 16, lines 1-5). Regarding the phase modulation in claims 11 & 33, the instant specification discloses phase modulation in Fig. 2, which is shown to be the repositioning of dots.

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1-4, 6-11, 13-16, 20-26, 28-33, 35-38 & 43-45 are rejected under 35

U.S.C. 102(e) as being anticipated by U.S. Patent 6,104,812 to Koltai et al. (Koltai).

Regarding claims 1-3, 7, 23-25 & 29, Koltai discloses determining a required plural number of watermark layers (Fig. 15) and a dot patterns/secondary images for each of the plurality of watermark layers, selecting at least one latent image object/secondary images for each of the plural of watermark layers (col. 4, lines 11-16) and embedding each latent image object/secondary images into its respective watermark layer (col. 4, lines 11-16), superposing the watermark layers to form the watermark/overall secondary image (col. 4, lines 40-44), defining and generating a decoder for each of the number of watermark layers (col. 4, lines 11-16) and applying the watermark to the document/primary image (col. 4, lines 11-16).

Regarding claims 4 & 26, Koltai discloses the dot pattern/secondary image being a linear coordinate mapping of a basic two-dimensional dot array (1:1) (Fig. 15).

Regarding claims 6 & 28, Koltai discloses a random dot array (co. 8, lines 21-23).

Regarding claims 8-9 & 30-31, Koltai discloses the latent image objects containing information that is critical to the application (col. 11, lines 45-49).

Regarding claims 11 & 33, Koltai discloses phase modulation (Fig. 10).

Regarding claims 13 & 35, Koltai discloses a decoder for each watermark layer (Fig. 15) that has a decoder structure related to a dot pattern structure of a carrier dot pattern of the relevant watermark layer (Figs. 19A-19J) and in the direction where the latent image object is embedded (col. 16, lines 1-12).

Regarding claims 14 & 36, Koltai discloses a conjunct/90 degree relationship (col. 16, lines 1-12).

Regarding claims 15 & 37, Koltai does not specifically disclose sufficient difference, however, as the watermark layers/secondary images are superimposed on the primary image to be later verified, it is inherent that the secondary images are of sufficient difference to avoid interference.

Regarding claims 16 & 38, Koltai discloses a difference between layers to avoid interference (col. 14, lines 47-51).

Regarding claims 20-22 & 43-45, Koltai discloses the watermarks being embedded into the various color channels (col. 14, line 46 – col. 15, line 10 & Fig. 15).

### ***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 5 & 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koltai, as applied to claims 2 & 26 above, in view of U.S. Patent 4,828,644 to Ochoa et al. (Ochoa). Koltai

Art Unit: 2134

discloses performing rotations (col. 4, lines 12-25), but lacks the dot pattern including a non-linear coordinate mapping of a basic two-dimensional dot array. However, Ochoa teaches that rotations are linear operations in polar coordinate space (col. 1, lines 23-46). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include a non-linear coordinate mapping (polar) of a basic two-dimensional dot array. One of ordinary skill in the art would have been motivated to perform such a modification to perform linear operations resulting in a rotation, as taught by Ochoa (col. 1, lines 23-46).

12. Claims 12 & 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koltai, as applied to claims 11 & 33 above, in view of U.S. Patent 6,636,616 to Harrington. Koltai lacks smoothing to avoid abrupt changes. However, Harrington teaches that  $W(x, y)$  (the watermarking function) should smoothly transition from one value to another (in this case from -1 to +1) to avoid abrupt visible transitions in the image (col. 5, lines 44-53). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include a post-processing smoothing step. One of ordinary skill in the art would have been motivated to perform such a modification to avoid abrupt visible transitions in the image, as taught by Harrington (col. 5, lines 44-53).

13. Claims 17 & 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koltai, as applied to claims 13 & 35 above, in view of U.S. Patent 6,345,104 to Rhoads. Koltai discloses a counterfeit-proof layer (col. 15, lines 28-33), but lacks the decoder being a photocopier. However, Rhoads teaches that by including watermark verification features (decoder) into a

Art Unit: 2134

photocopier, the copier can take action if reproduction of a security document is attempted (col. 3, lines 1-26). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include the decoder in a photocopier. One of ordinary skill in the art would have been motivated to perform such a modification to take action if reproduction of a security document is attempted, as taught by Rhoads (col. 3, lines 1-26).

14. Claims 18 & 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koltai in view of Rhoads, as applied to claims 17 & 39 above, in view of U.S. Patent 5,767,889 to Ackley. Koltai, as modified above, lacks a post-processing step to remove dots that are too close to adjacent dots in a non-object area. However, Ackley teaches that it is useful to eliminate dots on bar code printer to ensure that the bars do not bleed into each other under certain printing conditions (col. 5, lines 43-67). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to remove dots that are too close to adjacent dots. One of ordinary skill in the art would have been motivated to perform such a modification so the dots to not bleed into each other during printing, as taught by Ackley (col. 5, lines 43-67).

15. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Koltai, as applied to claim 1 above, in view of U.S. Patent 5,659,613 to Copeland et al. (Copeland). Koltai discloses generating the watermark (Fig. 13), controlling the printing process to protect the document and the watermark from attack (col. 4, lines 35-40) and generating a decoder device to enable verification of the authenticity of the document (col. 8, lines 8-32 & col. 11, lines 26-34, col. 15, lines 28-34). Koltai lacks verifying the authenticity and copyright of the document



Art Unit: 2134

before printing. However, Copeland teaches that to ensure legitimate use of a product, such as a DVD, the system searches for an authentication signature/watermark and will not play the disk if it isn't found (col. 1, lines 48-50 & col. 2, lines 35-56). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to verify the authenticity and copyright of the document before printing. One of ordinary skill in the art would have been motivated to perform such a modification to ensure legitimate use of the printed matter, as taught by Copeland (col. 1, lines 48-50 & col. 2, lines 35-56).

16. Claims 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koltai, as applied to claim 23 above, in view of "If One Watermark is Good, Are More Better?" by Mintzer et al. (Mintzer).

Regarding claim 41, Koltai discloses that the watermark being included in a document for protection (col. 15, lines 27-34), but not for authentication. However, Mintzer teaches that watermarks are often used to determine if an image has been altered (§1.2 ¶2). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to also include information about the document, so as to provide authentication. One of ordinary skill in the art would have been motivated to perform such a modification to verify the content of the object, as taught by Mintzer (§1.2 ¶2).

Regarding claim 42, Koltai discloses watermarking a word (col. 15, lines 27-34).

### ***Conclusion***

Art Unit: 2134

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Simitoski whose telephone number is (571) 272-3841. The examiner can normally be reached on Monday - Thursday, 6:45 a.m. - 4:15 p.m.. The examiner can also be reached on alternate Fridays from 6:45 a.m. – 3:15 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Morse can be reached at (571) 272-3838.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks  
Washington, DC 20231

**Or faxed to:**

(703)746-7239 (for formal communications intended for entry)

**Or:**

(571)273-3841 (Examiner's fax, for informal or draft communications, please label "PROPOSED" or "DRAFT")

Art Unit: 2134

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



MJS  
March 14, 2005



GREGORY MORSE  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100

GREGORY MORSE  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100